

## WHAT IS CLAIMED IS:

1. A chemical decontamination method of chemically decontaminating radioactive nuclides from a metallic material contaminated by the radioactive nuclides, the method comprising the steps of:

injecting oxalic acid and hydrazine as a reductive decontaminating agent into water being in contact with the metallic material;

stopping the injecting step of the hydrazine after cation<sup>exchange</sup> resin arranged in a circulation line connected to the metallic material breaks; and

decomposing at least oxalic acid and the hydrazine in the reductive decontaminating agent using a decomposing catalyst.

2. A chemical decontamination method as claimed in claim 1, further comprises a step of:

introducing said water being in contact with metallic material into said cation resin.

3. A chemical decontamination method as claimed in claim 2, wherein said step of introducing said water being in contact with metallic material into said cation resin is performed prior to said step of stopping the injection of the hydrazine.

4. A chemical decontamination method as claimed in claim 1, wherein said decomposing step is performed after said step of stopping the injection of the hydrazine.

5. A chemical decontamination method as claimed in claim 1, wherein  $H_2O_2$  is injected into said water during said decomposing step.

6. A chemical decontamination method as claimed in claim 1, further comprises a step of:

cleaning said water after said decomposing step.

7. A chemical decontamination method as claimed in claim 1, further comprises a step of:

changing said cation resin after said decomposing step.

8. A chemical decontamination method of chemically decontaminating radioactive nuclides from a metallic material contaminated by the radioactive nuclides, the method comprising the steps of:

reductively decontaminating the radioactive nuclides from the metallic material by injecting oxalic acid and hydrazine as a reductive decontaminating agent into a circulation line connected to the metallic material;

stopping the injecting step of the hydrazine after cation resin arranged in a circulation line connected to the metallic material breaks; and

;